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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,551	10/18/2005	Dominik Eisert	5367-146PUS	1182

27799 7590 11/23/2009

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2815	

MAIL DATE	DELIVERY MODE
11/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,551	EISERT ET AL.	
	Examiner	Art Unit	
	JOSEPH NGUYEN	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-7,9-19,21-29,31-34,36 and 37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,3-7,9-17 and 33* is/are allowed.

6)☒ Claim(s) *18,19,21-29,31,32,34,36 and 37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/31/09, 8/3/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 31 is objected to because of the following informalities: claim 31 depends from the canceled claim 30. For the sake of examination, it is assumed claim 31 depends from claim 18. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 18, 19, 21, 31, 36 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Heremans et al. (Patent No. 6,504,180).

Regarding claim 18, Heremans et al. discloses, for example, in figure 11 a radiation-emitting semiconductor device comprising a substantially planar reflective layer 19, the reflective layer being applied on a carrier substrate 22; and a multilayer structure comprising an active, radiation-generating layer 10; a first main surface coupled to the reflective layer 19; and a second main surface remote from the first main area for coupling out the radiation generated in the

active, radiation-generating layer; a transparent layer 12 disposed between the first main surface of the multilayer structure and the reflective layer 19, said transparent layer being patterned one- or two-dimensionally 41, wherein the multilayer structure is an epitaxial layer structure, and the semiconductor device is free of a deposition substrate of the multilayer structure; and wherein the transparent layer comprises convex elevations 41, the convex elevations tapering in a direction away from the first main surface of the multilayer structure 04" to the reflective layer 19. See col. 11, lines 5-48

Regarding claim 19, Heremans et al. discloses the transparent layer 12 is conductive.

Regarding claim 21, Heremans et al. discloses in figure 11 the elevations 41 have the form of truncated pyramids or truncated cones or a trapezoidal cross-sectional form.

Regarding claim 31, Heremans et al. discloses the reflective layer 19 serves as a contact area of the semiconductor device.

Regarding claim 36, Heremans et al. discloses due to the convex elevations, the transparent layer 12 comprises first and second regions, the first regions having a thickness greater than a thickness of the second regions (regions that are patterned).

Regarding claim 37, Heremans et al. discloses the active, radiation-generating layer 10 is a continuous layer, and the transparent layer 12 comprises a plurality of elevations that overlap with the active, radiation-

generating layer.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heremans et al.

Regarding claims 22-23, Heremans et al. discloses in figure 2c the elevations have an aperture angle of certain degree(s), not necessarily between approximately 30º and approximately 70º or between approximately 40º and approximately 50º. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heremans et al. by including the elevations having an aperture angle of between approximately 30º and approximately 70º or between approximately 40º and approximately 50º, since it has been held that where the general conditions of a claim are disclosed in the prior art discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 24, Ono et al. discloses in figure 2c the elevations have certain heights. Heremans et al. does not disclose the height of the elevations being at least as large as the height of the plane region of the multilayer structure

between the active, radiation generating layer and the elevations. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Ono et al. by including the height of the elevations being at least as large as the height of the plane region of the multilayer structure between the active, radiation generating layer and the elevation, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 25, Ono et al. discloses in figure 2c the elevations have certain heights. Ono et al. does not disclose the height of the elevations being approximately twice as large as the height of the plane region of the multilayer structure between the active, radiation generating layer and the elevations. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Ono et al. by including the height of the elevations being approximately twice as large as the height of the plane region of the multilayer structure between the active, radiation generating layer and the elevation, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 26, Heremans et al. discloses in figure 2c the elevations have grid dimension. Heremans et al. does not disclose the grid dimension of the elevations being at most approximately five times as large as the height of the

elevations. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Heremans et al. by including the grid dimension of the elevations being at most approximately five times as large as the height of the elevations, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 27, Heremans et al. discloses in figure 2c the elevations have grid dimension. Heremans et al. does not disclose the grid dimension of the elevations being at most approximately three times as large as the height of the elevations. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Heremans et al. by including the grid dimension of the elevations being at most approximately three times as large as the height of the elevations, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 28-29, Heremans et al. does not disclose the degree of reflection of at least 70% or 85%. Nevertheless, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Heremans et al. by including the layer coupled to the first main area of the multilayer structure having a degree of reflection of at least 70% or at least 85%, since it has been held that discovering an optimum value of a result effective

variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

6. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heremans et al. in view of Yamazaki et al. (U.S. Patent No. 6,515,310).

Regarding claim 32, Heremans et al. discloses in figure 11 substantially all the structure set forth in claim 32 except for a transparent protective layer being applied on the second main area of the multilayer structure. However, Yamazaki et al. disclose in figure 3A a semiconductor device comprises a transparent protective layer 305 applied on top surface of the multilayer structure to protect the device. In view of such teaching, it would have been obvious at the time of the present invention to modify Heremans et al. by including a transparent protective layer being applied on the second main area of the multilayer structure to protect the device.

7. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heremans et al. in view of Kamemura et al. (U.S. Publication No. 2002/0134986)..

Regarding claim 34, Heremans et al. discloses the multilayer structure is based on GaAs, not on GaN as claimed. However, Kamemura et al. discloses in paragraph [0003] the light emitting diode device including the multilayer structure produced by an eptiaxial growth of GaAs or GaN. In view of such teaching, it would have been obvious at the time of the present invention to modify

Heremans et al. by including the multilayer structure being based on GaN because GaN and GaAs were art recognized equivalents as semiconductor materials that can be either used for the multiplayer structure of a light emitting device for a specific design or application.

Allowable Subject Matter

8. Claims 1, 3-7, 9-17 and 33 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The reference (s) of record do not teach or suggest, either singularly or in combination at least the limitation of "a region of the multilayer structure that adjoins the second main area of the multilayer structure is patterned one- or two- dimensionally to form convex elevations, and a height (hi) of the elevations is at least as large as a height (h2) of an unpatterned region of the multilayer structure that is between the active, radiation-generating layer and the elevations" for claim 1.

Response to Arguments

9. Applicant's arguments with respect to claims 18-19, 21-29, 31-32, 34, 36 and 37 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 8:30 am- 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kenneth A Parker/

Supervisory Patent Examiner, Art Unit 2815

/J. N./
Examiner, Art Unit 2815